RESEARCH IN PREVENTION

FISCAL YEAR 1980

Budget Information and
Program Highlights

NATIONAL INSTITUTES OF HEALTH
DEPARTMENT OF HEALTH AND HUMAN SERVICES

81.2

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Foreword

As methods are sought to stem the toll taken on society by disease and accidents and to curb the inflation of health care costs, increasing emphasis is being placed on the orientation of biomedical research, health education, and health care services toward disease prevention and health promotion. This is now a major initiative of the Department of Health and Human Services (DHHS). In announcing the prevention initiative in a speech delivered at NIH on March 8, 1979, former DHHS Secretary Califano noted that the first challenge facing NIH is that of "maintaining excellence as NIH moves in new and unfamiliar directions" including "research directly related to prevention."

NIH has long been involved in prevention-related research, even though these activities might not always have been termed "prevention." As former NIH Director Dr. Donald S. Fredrickson reported to the Congress in 1979:

> Our product is knowledge, fundamental knowledge, knowledge about life, disease and malfunction. And our ultimate aim, the aim of all that research, is prevention, because that clearly is the most useful extension of knowledge in the field of health.[1]

Modern prevention research has become more complex, a reflection of a shift in the prevalence of infectious vis-a-vis chronic disease in the population during the past century. Nonetheless, the results, as well as the promise, of disease prevention and health promotion in American health care have become more challenging to research scientists throughout the country. In his Senate confirmation hearings, DHHS Secretary Richard S. Schweiker acknowledged the importance of prevention research and its role in his plans for the Department:

> I would like to be remembered as the Secretary who put preventive health care at the very top of the medical agenda . . . . It seems to me that we ought to put emphasis on research projects that keep people well and avoid disease, as opposed to finding out what to do after they are sick.[2]

[1] U.S. Congress, House, Committee on Interstate and Foreign Commerce: Future Directions, Hearings before the Subcommittee on Health and the Environment. 96th Congress, 1st sess., 1979, p. 92.

[2] Hearing before the Committee on Finance, U.S. Senate, 97th Congress. Nomination of Richard S. Schweiker to be Secretary of Health and Human Services, January 6, 1981. Washington, D.C.: U.S. GPO, 1981, p. 20.

Summary of Findings

Prevention is an integral component of the NIH mission, but only recently has an accurate accounting been made of its share of total NIH research allocations. The initial attempt at identifying ongoing NIH prevention-related research, undertaken in 1979 by this office, revealed that $352 million was spent in FY 1978 for primary prevention research alone. The followup study of FY 1980 indicates that the figure has grown to $506 million, an increase of 69 percent. A portion of this increase; it should be noted, reflects greater agreement as to what constitutes primary prevention research.

Other significant findings of the FY 1980 survey are that:

- More than 57 percent of the total NIH prevention obligations were made through the research grant mechanism;
- Prevention research constituted 16.9 percent of the total budget for all institutes*, up from 15.5 percent in FY 1979;
- Ten of the 13 institutes and divisions reported that prevention research made up more than 10 percent of their total budgets; and
- A single institute (NCI) was responsible for nearly 50 percent of the total contract funds obligated by NIH in the prevention area, while another institute (NHLBI) accounted for over 25 percent of the total NIH grant funds obligated to the prevention area.

These and other findings related to NIH prevention research are summarized in this document through tables, graphs, and figures representing FY 1980 actual and, in a few cases, FY 1981 estimated budgetary obligations. The data presented herein were compiled by the NIH Coordinator for Disease Prevention and Health Promotion, with considerable effort and input from the program managers and planning and budget officers of the NIH bureaus, institutes, and divisions (BID's).

*This does not include NIH obligations for the National Library of Medicine, research training, construction, program management, and direct operations for all institutes except the Fogarty International Center.

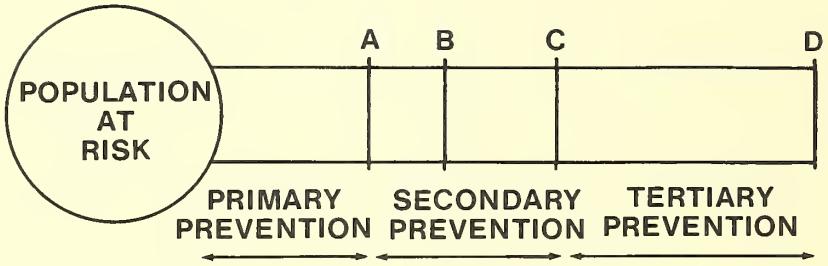
Definition of Prevention

The figures and project descriptions presented throughout this booklet primarily apply to research projects and programs involving primary prevention, based on the following NIH working definition:

> Primary Prevention—Intervention before the biologic onset of the disease in question (e.g., reduction of dust levels in occupational settings). Included is basic research directly relating to development of preventive measures as well as direct preventive measures themselves (such as vaccination programs, regulatory activities, and public education).
>
> Included also are epidemiologic studies allowing for the identification and quantification of risk factors relating to personal characteristics such as habits associated with diet, use of cigarettes, alcohol consumption, exercise, and the like. Also included is the treatment of various biological conditions and risk factors such as elevated cholesterol and blood pressure levels and cigarette smoking to prevent cardiovascular complications such as myocardial infarction and stroke as well as chemoprevention, where there is a population with disease but not frank carcinoma that is being treated with chemoprevention (e.g., patients with leukoplakia being treated to prevent oral squamous cell carcinoma).

The above definition is meant to clearly differentiate primary from secondary prevention (i.e., intervention when disease can be detected but a step before it is symptomatic), as well as from tertiary intervention (alleviating disability resulting from disease after symptoms have become detectable).

The stages of the "prevention continuum" are depicted in the diagram at the upper right. For the purposes of this NIH compilation, tertiary prevention is excluded; secondary prevention research is *only* included when it relates to methods that are instrumental in preventing degeneration into more severe disease states following the onset of symptoms.



A: Biologic Onset
B: Possible Detection
C: Clinical Onset
D: Endpoint (cure, death)

Adapted from Hutchison, G.B.: "Evaluation of Preventive Services." *Journal of Chronic Diseases* 11: 497-508, 1960.

This restriction to primary prevention was made at the beginning of our survey of NIH prevention activities in 1978. Whereas it can be argued that the ultimate aim of nearly all biomedical research sponsored by NIH is to prevent disease, we believe it is preferable and most indicative at this time to identify only those research efforts aimed at intervention *before* the onset of disease.

Methods of Compilation

In the 3-1/2 years that this office has been compiling NIH prevention-related research data, our sources and methods of collection have been modified and refined considerably. Initially, we conducted a search of the Smithsonian Science Information Exchange (SSIE) and Computer Retrieval of Information on Scientific Projects (CRISP) data bases, both of which identify and index notices of research in progress at NIH. All notices indexed under "Prevention of Disease or Injury"

(CRISP) and "Preventive Medicine or Prophylaxis" (SSIE) were retrieved, then manually screened for conformance to the NIH working definition of primary prevention. Of these notices, approximately 700 were identified as focusing on prevention. The notices were then sent to the sponsoring institutes for review and comment. We discovered that while there were some areas of overlap, many projects reported by CRISP were not reported by SSIE, and vice versa. In addition, numerous projects reported by the institutes were not among either the CRISP or the SSIE yields.

This brought to our attention the indexing difficulties and incompatibility of data bases. Since the research projects had not been indexed according to our definition of primary prevention, in most cases we were not able to retrieve the appropriate notices.

Consequently, in each case of the past 3 years we have sent a memorandum directly to BID directors requesting them to select those projects which in their view could be considered to involve primary prevention in accordance with the NIH working definition, and to estimate percentages for large projects or programs if necessary. We requested that each BID categorize the individual projects and funding levels by grants, contracts, and intramural projects. This has now become an ongoing annual request, the responses to which will be compiled at the end of each fiscal year into summary documents such as this. Since our intent was to identify prevention research activities, funding figures for management, operations, and construction were excluded from our report, although in some cases these activities do, in fact, relate to prevention.

Format

Section I of this document contains tables and charts depicting FY 1980 actual and, where available, FY 1981 estimated budgetary information relative to overall NIH prevention research efforts. For easy reference, each graphic chart is presented on a right-hand page facing the left-hand numerical table on which it is based.

Section II presents NIH prevention research activities on an institute-by-institute basis, in both numerical and narrative form. The institutes (and the Division of Research Resources and the Fogarty International Center) are presented in alphabetical order, with supporting data categorized by organizational structure or program area, preceded by brief bulleted descriptions of major areas of activity in prevention research for each BID. These project descriptions emphasize highlights only; more comprehensive research program information will appear in a companion volume to this document.

The reader may note that some BID's allocate a much higher percentage of funds to prevention research than do others. Merely comparing funding levels, however, can be misleading, since the purpose and organization of each component often determine the scope of its prevention research effort. Some institutes, such as NIEHS and NICHD, have mandates that are inherently prevention oriented. Others, such as NIGMS (which almost exclusively supports investigator-initiated basic research) do not have a categorical disease mission. Therefore, their activities are by intention less directed and more general in nature than institutes with responsibility for specific disease areas. This overwhelmingly basic research, though vital to the understanding of underlying factors in disease causation and hence to the development of prevention measures, is not included in the primary prevention data presented in this summary booklet.

John T. Kalberer, Jr., Ph.D.
NIH Coordinator for Disease
Prevention and Health Promotion

Thomas E. Malone, Ph.D.
Acting Director, National
Institutes of Health

November 1981

Key to Abbreviations

DHHS	=	(U.S.) Department of Health and Human Services
PHS	=	(U.S.) Public Health Service
NIH	=	National Institutes of Health
BID's	=	Bureaus, Institutes, and Divisions (of NIH)
NCI	=	National Cancer Institute
NEI	=	National Eye Institute
NHLBI	=	National Heart, Lung, and Blood Institute
NIA	=	National Institute on Aging
NIAID	=	National Institute of Allergy and Infectious Diseases
NIADDK	=	National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases
NICHD	=	National Institute of Child Health and Human Development
NIDR	=	National Institute of Dental Research
NIEHS	=	National Institute of Environmental Health Sciences
NIGMS	=	National Institute of General Medical Sciences
NINCDS	=	National Institute of Neurological and Communicative Disorders and Stroke
DRR	=	Division of Research Resources
FIC	=	Fogarty International Center

Key to Charts

1. All figures refer to FY 1980 obligations for primary prevention-related research (as defined), expressed in thousands of dollars.
2. In a few cases, totals may not add up precisely due to rounding.
3. In a few cases, individual prevention-related projects (as opposed to programs) could not be isolated from the BID budget.
4. In almost all cases, prevention-related figures are provided separately, for grant, contract, and intramural programs of the BID's.

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Funding for Research in Prevention at the National Institutes of Health

Fiscal Year 1980

TRENDS IN OVERALL NIH VERSUS NIH PREVENTION RESEARCH FUNDING

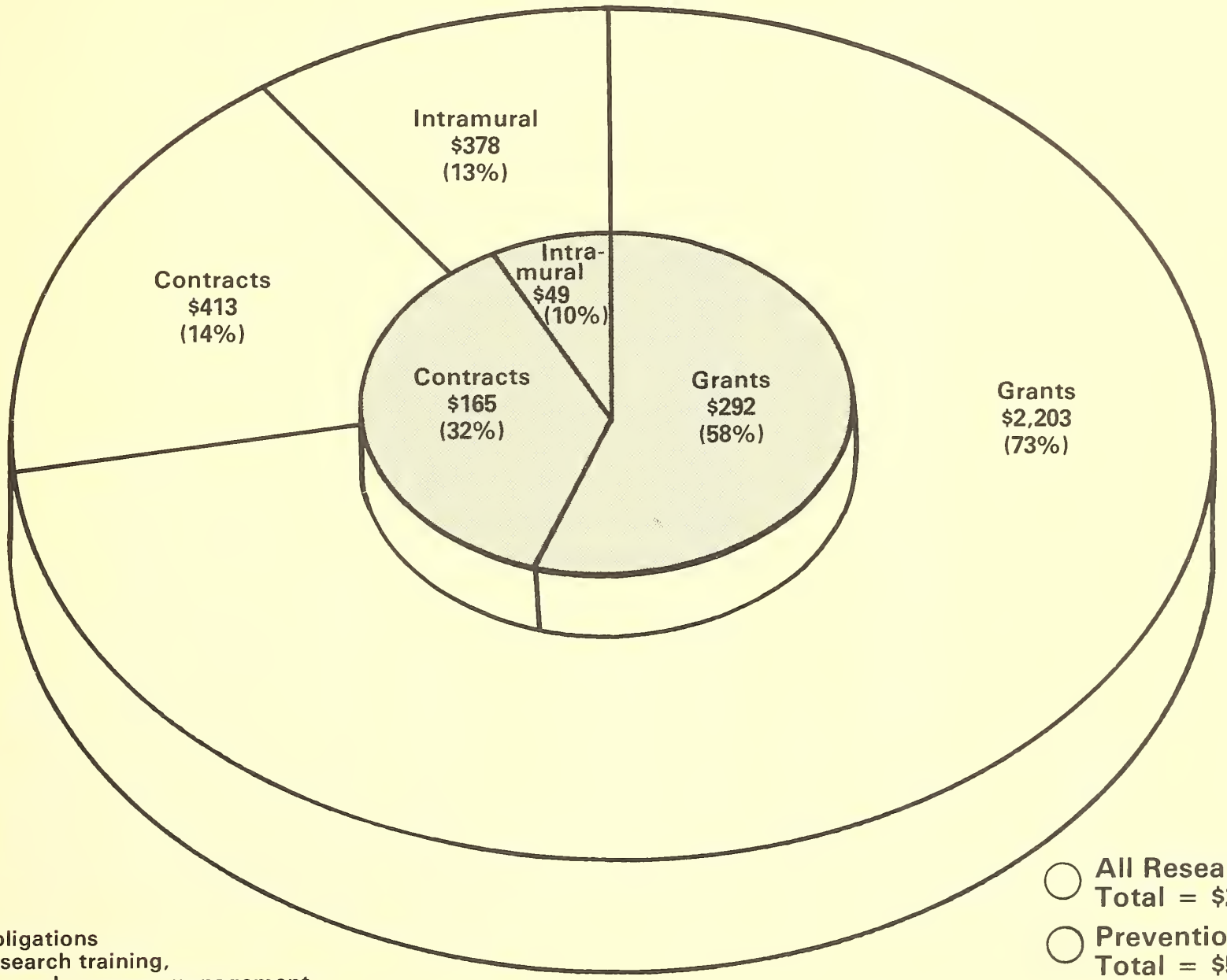
Fiscal Year	Total NIH Funding**		Total Prevention Funding		Prevention Funding as a Percentage of Total NIH Funding	R & D Biomedical Deflator***
	Current Dollars	Constant Dollars	Current Dollars	Constant Dollars		
1978	$2,389,881	$2,389,881	$352,121	$352,121	14.8%	100.00
1979	2,784,126	2,572,178	419,476	387,542	15.1	108.24
1980	2,993,606	2,528,943	506,459	428,802	16.9	118.11
1981 (est.)*	3,121,125	2,399,773	515,512	396,365	16.5	130.06

*FY 1981 total NIH obligations are estimates based on the 1981 column of the 1982 President Reagan's budget. FY 1981 prevention obligations are estimates received from institute budget officers.

**NIH obligations include funds for research grants, R&D contracts, disease control, intramural research, and FIC direct operations (conferences, fellowships, etc.)

***Provided by the Division of Program Analysis, Office of Program Planning and Evaluation, NIH.

NIH Total Funding* and Prevention Funding by Mechanism (FY 1980 Obligations in Millions of Dollars)



*Total NIH obligations excluding research training, construction, and program management.

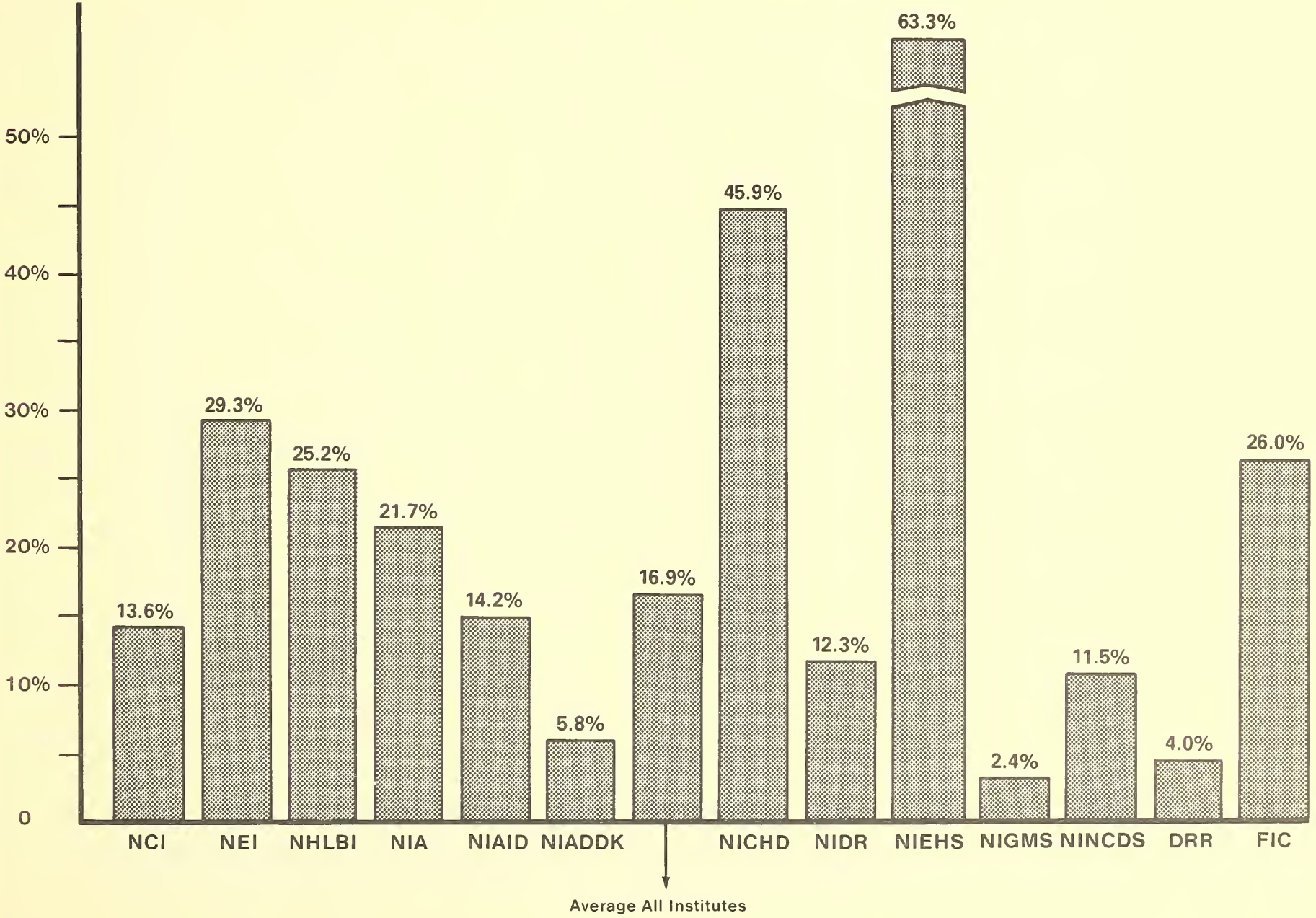
NIH Prevention Research Funding As a Percentage of Total NIH Funds (FY 1980 Obligations)

Institute	Total Funds — Dollars*		
	Total	Prevention	%
NCI	$ 905,872	$123,179	13.6
NEI	100,904	29,612	29.3
NHLBI	464,541	117,072	25.2
NIA	62,192	13,502	21.7
NIAID	193,520	27,480	14.2
NIADDK**	305,458	17,710	5.8
NICHD	186,047	85,373	45.9
NIDR	56,340	6,921	12.3
NIEHS	72,323	45,754	63.3
NIGMS	255,822	6,041	2.4
NINCDS	218,685	25,101	11.5
DRR	163,531	6,539	4.0
FIC	8,371	2,175	26.0
TOTAL	$2,993,606	$506,459	16.9

*Includes grants, contracts, and intramural.

**NIAMDD has now become NIADDK - the National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases.

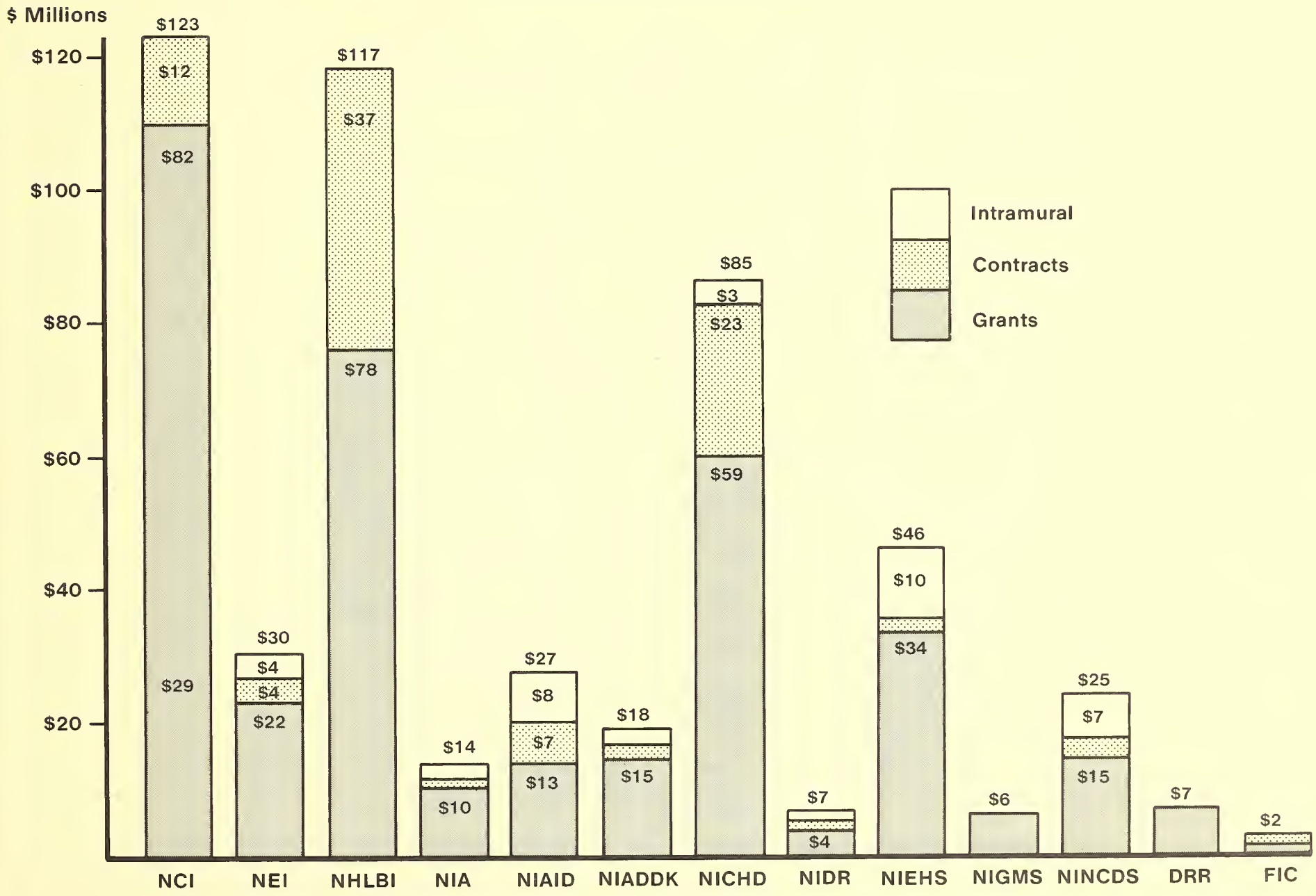
NIH Prevention Research Funding As a Percentage of Total NIH Funds (FY 1980 Obligations)



NIH Prevention Research by Mechanism of Support (FY 1980 Obligations)

Institute	Grants	Contracts	Intramural	Total
NCI	$ 28,984	$ 82,343	$11,852	$123,179
NEI	22,103	3,885	3,624	29,612
NHLBI	78,149	37,429	1,494	117,072
NIA	10,117	1,200	2,185	13,502
NIAID	12,802	7,000	7,678	27,480
NIADDK	14,977	977	1,756	17,710
NICHD	59,056	23,433	2,884	85,373
NIDR	4,039	1,815	1,067	6,921
NIEHS	33,876	2,024	9,854	45,754
NIGMS	6,041	—0—	—0—	6,041
NINCDS	14,847	3,228	7,205	25,101
DRR	6,539	—0—	—0—	6,539
FIC	575	1,600	—0—	2,175
TOTAL	$292,105	$164,934	$49,419	$506,459

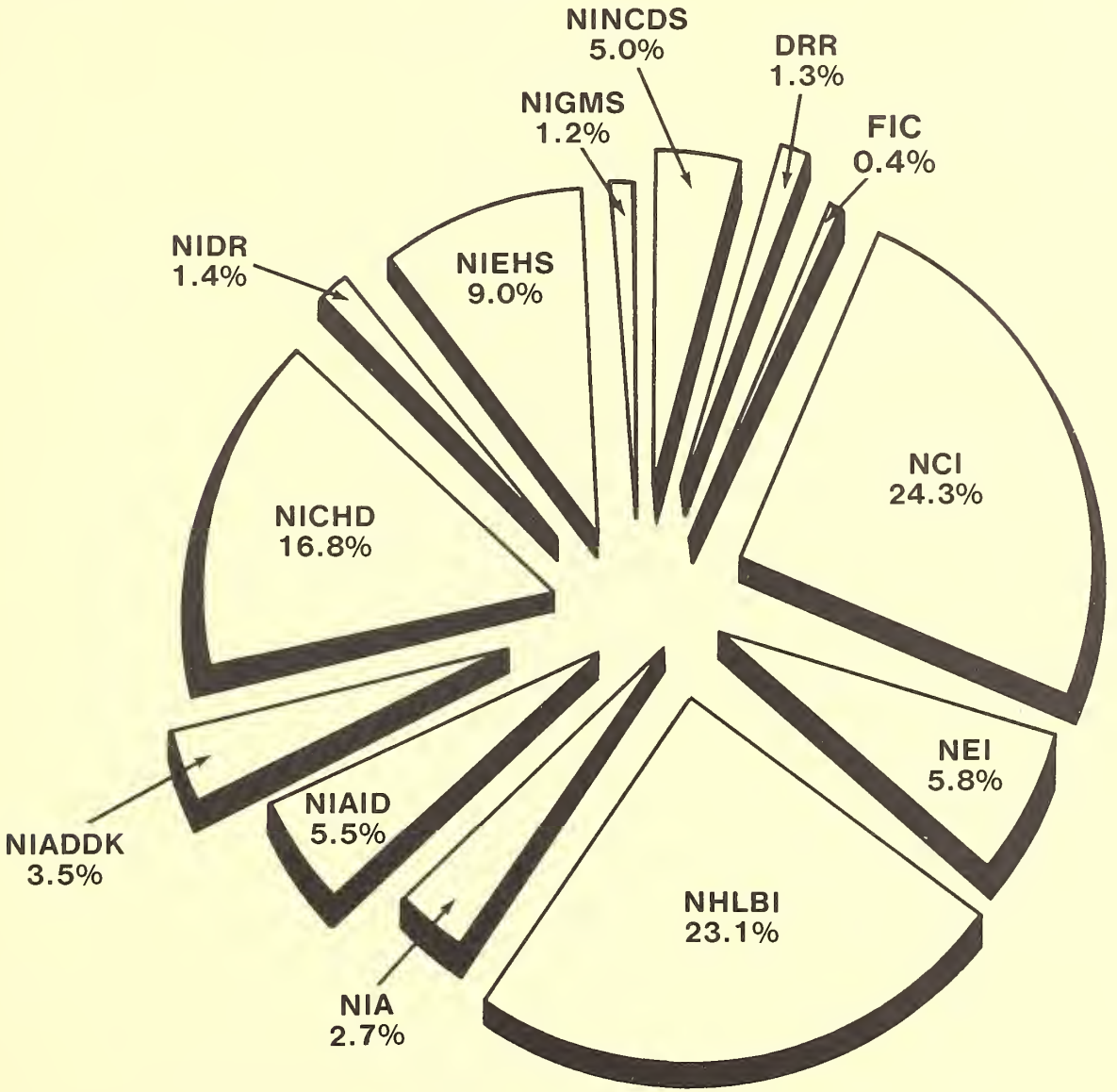
NIH Prevention Research by Mechanism of Support
(FY 1980 Obligations)



Distribution of Total NIH Prevention Research Funds by Institute (FY 1980 Obligations)

Institute	Total Funding	% of NIH Prevention Funding
NCI	$123,179	24.3%
NEI	29,612	5.8
NHLBI	117,072	23.1
NIA	13,502	2.7
NIAID	27,480	5.5
NIADDK	17,710	3.5
NICHD	85,373	16.8
NIDR	6,921	1.4
NIEHS	45,754	9.0
NIGMS	6,041	1.2
NINCDS	25,101	5.0
DRR	6,539	1.3
FIC	2,175	0.4
TOTAL	$506,459	100.0%

Distribution of Total NIH Prevention Research Funds by Institute (FY 1980 Obligations)



NIH Funding for DHHS Prevention Priority Areas[1] (FY 1980 Estimated Obligations[2])

PRIORITY AREA	SUPPORTING INSTITUTES	DOLLARS IN MILLIONS
Toxic Agent Control	NCI, NHLBI, NIEHS, DRR	$140
Pregnancy and Infant Care	NICHD, DRR	59
Family Planning	NICHD, DRR	29
Improved Nutrition	NCI, NEI, NHLBI, NIA, NIADDK, NINCDS, DRR	26
Occupational Safety and Health	NCI, NHLBI, DRR	22
Immunizations	NCI, NIAID, DRR	21
High Blood Pressure Control	NHLBI, DRR	14
Surveillance and Control of Infectious Diseases	NCI, NEI, NIAID, DRR, FIC	13
Smoking and Health	NCI, NHLBI, NICHD, DRR	11
Sexually Transmitted Diseases	NCI, NIAID	9
Accident Prevention and Injury Control	NHLBI	5
Fluoridation and Dental Health	NIDR, DRR	5
Physical Fitness—Exercise	NHLBI, NIA, DRR	4
Control of Stress and Violent Behavior	NHLBI, NIA, DRR	4
Misuse of Alcohol and Drugs	NIA, DRR	1
SUBTOTAL		364
Cross-cutting and Other	NCI, NEI, NHLBI, NIA, NIADDK, NIDR, NIGMS, NINCDS, DRR, FIC	113
TOTAL		$477

[1]Taken from *Prevention '80*, DHHS (PHS) Publication No. 81-50157.

[2]FY 80 figures do not match those in this book as these are not final budget figures but estimates.

Research in Prevention
Program/Project Descriptions and Funding Levels

Fiscal Year 1980

National Cancer Institute (NCI)

- Development of improved methods for predicting carcinogenicity, mutagenicity and teratogenicity
- Investigation of cellular and molecular mechanisms of carcinogenesis
- Development of chemopreventive agents; immunopreventive techniques
- Development of improved animal-to-man extrapolation techniques
- Educational programs to reduce exposure to occupational hazards
- Smoking cessation research, education and information programs; identification of high-risk groups
- Studies on how to apply etiologic information
- Environmental carcinogenesis research, information and education programs
- Studies of radiation exposure and cancer
- Studies of Vitamin A derivatives as preventive agents
- Epidemiologic studies to determine high-risk groups and individuals as well as etiologic factors for cancer
- Studies on the economics of specific prevention activities (cost/benefit)
- Development of procedures for the qualitative and quantitative analysis of body fluids and tissues and environmental specimens for the presence of chemical carcinogens and associated substances
- Development of organ and cell culture systems, biological models and bioassay systems for use in carcinogenesis studies
- Basic studies to lead to the understanding of the role of nutrients and dietary components in causing and inhibiting cancer
- State of the art assessments to examine the role of nutrients and dietary components in cancer incidence
- Collecting and disseminating technical information related to primary prevention

NCI

Research Area	Grants		Contracts		Total	
	No.	Dollars	No.	Dollars	No.	Dollars
Division of Cancer Cause and Prevention						
Chemical & Physical Carcinogenesis	31	$ 2,132	47	$12,312	78	$14,444
Smoking & Health	1	89	18	4,718	19	4,807
Diet & Nutrition	37	5,204	5	778	42	5,982
Viral Oncology	6	625	13	3,158	19	3,783
Epidemiology	58	6,314	34	15,014	92	21,328
Total	133	14,364	117	35,980	250	50,344
Division of Cancer Biology and Diagnosis						
Breast Cancer Task Force	4	1,067	9	546	13	1,613
Total	4	1,067	9	546	13	1,613
Division of Cancer Treatment						
Clinical Oncology	6	436	1	125	7	561
Developmental Therapeutics	--	--	1	127	1	127
Radiation	1	139	--	--	1	139
Total	7	575	2	252	9	827
Subtotal	144	$16,006	128	$36,778	272	$52,784

Continued

NCI

	Grants		Contracts		Total	
	No.	Dollars	No.	Dollars	No.	Dollars
Subtotal from previous page	(144)	(16,006)	(128)	(36,778)	(272)	(52,784)
Division of Resources, Centers and Community Activities						
Behavioral Medicine	7	748	--	--	7	748
Smoking and Health	--	--	3	396	3	396
Preventive Medicine	2	111	--	--	2	111
Radiation	--	--	5	262	5	262
Education	21	1,576	5	58	26	1,634
Occupational Medicine	6	1,180	4	4,830	10	6,010
National Organ Site Program	33	1,952	--	--	33	1,952
Cancer Centers, including Centers Outreach	52	6,323	--	--	52	6,323
Subtotal	121	11,890	17	5,546	138	17,436
National Toxicology Program Carcinogenesis Testing	4	1,088	73	40,019	77	41,107
Total Grants & Contracts	269	$28,984	218	$82,343	487	$111,327

NCI

NCI INTRAMURAL RESEARCH

Research Area	Dollars
Chemical & Physical Carcinogenesis	$ 7,740
Biological Carcinogenesis	380
Field Studies & Statistics	1,677
International Cancer Research Data Bank	360
Cancer Communications	1,195
	500
Total Intramural	$11,852

*Individual projects cannot be broken out by numbers.

NCI PREVENTION RESEARCH OBLIGATIONS BY MECHANISM

Mechanism	No.	Dollars
Grants	269	$ 28,984
Contracts	218	82,343
Intramural	*	11,852
TOTAL	487	$123,179

National Eye Institute (NEI)

- Prevention of hereditary and developmental degenerations of the retina
- Prevention of proliferative diabetic retinopathy, retrolental fibroplasia, and other proliferative retinopathies
- Prevention of branch vein occlusion
- Immune mechanisms underlying uveitis and other ocular inflammations and those involved in ocular response to infection
- Investigation of the effects of drugs, light and environmental factors on the retina and lens
- Prevention of recurrent corneal infection from herpes simplex virus
- Prevention of trachoma and related infections
- Basic research related to the prevention of human senile cataract
- Prevention of diabetic cataract
- Prevention of glaucoma
- Research on the effects of visual deprivation related to the prevention of amblyopia and strabismus
- Prevention and/or control of eye diseases related to nutritional deficiencies

NEI

Research Area	Grants		Contracts		Intramural		Total	
	No.	Dollars	No.	Dollars	No.	Dollars	No.	Dollars
Retinal & Choroidal Diseases	91	$ 9,064	23	$3,885	18	$2,174	132	$15,123
Corneal Diseases	40	4,273	--	--	3	362	43	4,636
Cataract	34	2,717	--	--	3	362	37	3,079
Glaucoma	14	1,448	--	--	6	725	20	2,173
Sensory & Motor Disorders of Vision	55	4,601	--	--	--	--	55	4,601
TOTAL	234	$22,103	23	$3,885	30	$3,624	287	$29,612

National Heart, Lung, and Blood Institute (NHLBI)

- Community-based multiple risk factor intervention demonstration programs
- Smoking cessation research, education, and demonstration programs; identification of high-risk individuals
- Epidemiologic studies on asthma in families
- Evaluation of antenatal steroid therapy in Neonatal Respiratory Distress Syndrome
- National High Blood Pressure Education Program
- Research, information, and demonstration programs aimed at control of hypertension
- Prevention of deep-vein thrombosis
- Education and counseling programs for Sickle Cell Disease
- Nutrition research, education, and demonstration programs aimed at lowering cholesterol, blood lipid, and weight levels
- Research into application of behavioral science to control of heart, lung, and blood disorders

NHLBI

Research Area	Grants		Contracts		Total	
	No.	Dollars	No.	Dollars	No.	Dollars
Heart Diseases						
Arteriosclerosis	34	$ 5,316	22	$16,230	56	$ 21,546
Hypertension	109	12,034	23	9,421	132	21,455
Cerebrovascular Disease	1	50	—	—	1	50
Coronary Heart Disease	50	14,949	18	9,426	68	24,375
Peripheral Vascular Disease	2	242	—	—	2	242
Arrhythmias	10	706	—	—	10	706
Heart Failure & Shock	4	267	—	—	4	267
Congenital & Rheumatic Heart Disease	1	40	—	—	1	40
Cardiomyopathies & Infections	5	257	—	—	5	257
Multiprogram Areas	65	16,975	—	—	65	16,975
Total	281	50,836	63	35,077	344	85,913

Continued

NHLBI

Research Area	Grants		Contracts		Total	
	No.	Dollars	No.	Dollars	No.	Dollars
Blood Diseases						
Bleeding & Clotting Disorders	175	11,317	—	—	175	11,317
Red Blood Cell Disorders	96	4,941	—	—	96	4,941
Sickle Cell Disease	27	6,525	—	—	27	6,525
Blood Resources	22	1,894	4	865	26	2,759
Total	320	24,677	4	865	324	25,542

Continued

NHLBI

	Grants		Contracts		Total	
	No.	Dollars	No.	Dollars	No.	Dollars
Subtotal from previous page	(601)	(75,513)	(67)	(35,942)	(668)	(111,455)
Lung Diseases						
Structure & Function	1	92	--	--	1	92
Chronic Obstructive Lung Diseases	7	1,152	3	343	10	1,494
Pediatric Pulmonary Diseases	12	566	7	1,144	19	1,710
Fibrotic & Immunologic Diseases	1	16	--	--	1	16
Pulmonary Vascular Diseases	1	30	--	--	1	30
Multiprogram Areas	1	781	--	--	1	781
Total	23	2,636	10	1,487	33	4,123
Total Grants & Contracts	624	78,149	77	37,429	701	115,578
Intramural Research	--	--	--	--	27	1,494
TOTAL	624	$78,149	77	$37,429	728	$117,072

National Institute on Aging (NIA)

- The etiology and management of adult onset diabetes
- Studies of the etiology and management of age-related endocrine disorders to delay onset or minimize primary and secondary effects
- Investigation of the etiology and management of age-related nervous system disorders
- Investigation of the fundamental basis and therapeutic effects of exercise, nutrition, and pharmacologic-oriented therapeutic measures on the pathophysiological correlates of aging
- Studies to delay, retard, or reverse adverse physiological and psychological effects that result from age-related development of deficits of gustatory, olfactory, auditory, and visual senses and of memory and mobility
- Research to determine ways to characterize and minimize drug toxicity, undesirable drug-drug interactions and adverse reactions to medication associated with aging
- Research to understand the basis of age-related changes of the immune system, the relationship to the onset of diseases and of methods to delay, retard or reverse such changes
- Investigations of the basis of the onset and of measures to delay or reverse skin aging and its effects on skin structure and functions

NIA

Grant Research	No.	Dollars
Biomedical Research & Clinical Medicine		
Immunology	9	$ 1,472
Pharmacology	10	731
Nutrition	5	529
Neuroscience	12	1,616
Endocrinology	10	756
Physiology	15	2,161
Total	61	7,265
Social & Behavioral Aging		
Social/Psychological Aging	6	600
Cognitive Aging	9	924
Aging & Social Structure	3	491
Biopsychological Aging	10	837
Total	28	2,852
Total Grants	89	$10,117

Intramural Research	No.	Dollars
Gerontology Research Center		
Physiology	6	$ 285
Neurosciences	2	120
Longitudinal Study	2	750
Behavior	4	525
Endocrinology	2	130
Nutrition	2	220
Pharmacology	4	155
Total	22	$ 2,185
Contract Research		
Epidemiology, Demography, & Biometry	3	1,200
Grant Research Total[1]	89	10,117
TOTAL	114	$13,502

[1]From left-hand chart.

National Institute of Allergy and Infectious Diseases (NIAID)

- Development of new and improved viral vaccines, including hepatitis and respiratory virus vaccines
- Development of new and improved bacterial vaccines, including pneumococcus, streptococcus, H. influenza b., and tuberculosis vaccines
- Control of vectors by biological (including genetic) means
- Development of vaccines for sexually transmitted diseases
- Screening techniques for prevention of severe allergic reactions
- Mechanisms for manipulation of the immune system

NIAID

Research Area	Grants		Contracts		Intramural		Total	
	No.	Dollars	No.	Dollars	No.	Dollars	No.	Dollars
Allergic Diseases	21	$ 2,696	--	$ --	--	$ --	21	$ 2,696
Bacterial Vaccines	43	4,632	13	1,937	11	1,945	67	8,514
Viral Vaccines	12	1,196	17	4,940	11	4,595	40	10,731
Prevention of Vector Transmitted Diseases	58	4,278	1	123	7	1,138	66	5,539
TOTAL	134	$12,802	31	$7,000	29	$7,678	194	$27,480

National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases (NIADDK)

- Promotion of research in basic and clinical nutrition to advance knowledge about the functions and requirements of nutrients in the body, and the relationship between diet and nutrients to health and disease
- Investigation of the value of dietary mineral supplementation in prevention of osteoporosis
- Studies of prevention of kidney transplant rejection with immunosuppressive therapy
- Studies aimed at prevention of benign prostatic hyperplasia and urolithiasis
- Research geared toward gaining sufficient understanding of the mechanisms underlying the causative diseases of chronic renal failure to facilitate prevention
- Basic, clinical and epidemiological studies of the etiology and pathology of diabetes and other metabolic diseases, with emphasis on causative, genetic and environmental factors; studies to identify markers which characterize individuals predisposed to diabetes
- Studies of obesity in relation to diabetes, arthritis, and rheumatism

NIADDK

Research Area	Grants		Contracts		Intramural		Total	
	No.	Dollars	No.	Dollars	No.	Dollars	No.	Dollars
Nutrition	69	$ 5,448	1	$131	--	--	70	$ 5,579
Digestive Diseases	7	707	1	91	--	--	8	798
Arthritis	24	2,226	1	171	3	$ 303	28	2,700
Musculoskeletal Diseases	5	484	1	92	--	--	6	576
Skin Diseases	1	93	--	--	--	--	1	93
Diabetes	15	2,069	2	492	2	1,115	19	3,676
Metabolic Diseases	2	172	--	--	3	228	5	400
Endocrinology	1	42	--	--	--	--	1	42
Kidney Diseases	12	3,011	--	--	--	--	12	3,011
Hematology	10	725	--	--	1	110	11	835
TOTAL	146	$14,977	6	$977	9	$1,756	161	$17,710

National Institute of Child Health and Human Development (NICHD)

- Prevention of death and disability associated with high-risk pregnancies
- Causes and prevention of prematurity and low birthweight
- Behavioral antecedents in childhood of habits harmful to health
- Metabolic, genetic, nutritional, and immunologic antecedents to disease and disability
- Effects of smoking, over-the-counter drug use, and other environmental substances on fetal development
- Causes, prevention, and amelioration of mental retardation
- Research on new and improved contraceptives and on contraceptive safety
- Determinants and consequences of adolescent childbearing
- Causes and consequences of population changes

NICHD

Research Area	Grants		Contracts		Intramural		Total	
	No.	Dollars	No.	Dollars	No.	Dollars	No.	Dollars
Center for Population Research								
Social & Behavioral	75	$ 7,312	34	$ 4,168	--	$ --	109	$11,480
Contraceptive Evaluation	--	--	33	7,612	2	60	35	7,672
Human Infertility	15	1,311	--	--	1	485	16	1,796
Contraceptive Development	--	--	46	8,256	--	--	46	8,256
Total	90	8,623	113	20,036	3	545	206	29,204
Center for Research for Mothers & Children								
Mental Retardation	293	13,565	1	232	3	1,048	297	14,845
Social Learning	16	1,803	--	--	--	--	16	1,803
Nutrition	94	8,638	4	604	1	285	99	9,527
Congenital Malformations	55	4,945	--	--	--	--	55	4,945
High-Risk Pregnancy	76	7,688	10	898	1	59	87	8,646
Fetal Pathology	57	5,338	1	37	3	251	61	5,626
Prematurity	38	3,032	1	9	--	--	39	3,040
Disorders of the Newborn	46	3,810	7	527	--	--	53	4,337
Sudden Infant Death Syndrome	21	1,614	9	1,091	--	--	30	2,704
Total	696	50,433	33	3,397	8	1,643	737	55,473
Epidemiology & Biometry	--	--	--	--	16	696	16	696
TOTAL	786	$59,056	146	$23,433	27	$2,884	959	$85,373

National Institute of Dental Research (NIDR)

- Identification of etiologic agents in caries and periodontal diseases
- Identification, testing, and development of non-cariogenic sugar substitutes
- Studies of anti-plaque and anti-microbial compounds to prevent caries and periodontal diseases
- Fluoride mouthrinsing projects in communities with non-fluoridated water supplies
- Formulation and testing of controlled-release delivery techniques for fluoride compounds to prevent caries

NIDR

Research Area	Grants	Contracts	Intramural	Total
Dental Caries	$3,138	$1,815	$ 598	$5,551
Periodontal Diseases	502	--	387	889
Restorative Materials	54	--	--	54
Soft Tissue Stomatology	343	--	83	426
Pain Control	1	--	--	1
TOTAL	$4,039	$1,815	$1,067	$6,921

National Institute of Environmental Health Sciences (NIEHS)

- Coordination and expansion of government toxicologic testing programs
- Development of improved techniques for
  - — predicting the mutagenic, teratogenic, and carcinogenic hazards of chemicals to man
  - — detecting and quantifying low-level chronic effects, including carcinogenesis, mutagenesis, teratogenesis, and organ toxicity, of pollutants
  - — understanding the mechanisms of toxicity of environmental and occupational pollutants and hazards
- Case control of maternal exposure histories and establishment of a chemical teratogen hotline
- Investigation of the mechanisms of toxication and biological effects of numerous exposures to environmental substances, including asbestos, mercury, vinyl chloride, sulfuric acid mist, kepone, auto exhaust, pesticides, food additives, aerosols, nitroso compounds, occupational chemicals, and products of the petrochemical industry
- Studies of how physical factors such as heat, light, lasers, microwave radiation, and noise produce stress and disease
- Epidemiologic studies in the above areas

NIEHS

Research Area	Grants		Contracts		Intramural		Total	
	No.	Dollars	No.	Dollars	No.	Dollars	No.	Dollars
Prediction, Detection & Assessment of Environmentally-Caused Diseases & Disorders	151	$15,244	6	$1,001	103	$6,504	260	$22,749
Mechanisms of Environmental Diseases & Disorders	139	10,502	4	1,023	53	3,350	196	14,875
Environmental Health Research & Manpower Development Resources	14	8,130	--	--	--	--	14	8,130
TOTAL	304	$33,876	10	$2,024	156	$9,854	470	$45,754

National Institute of General Medical Sciences (NIGMS)

- Investigation of hereditary factors which contribute to many major diseases
- Research into the cellular and molecular basis of disease
- Research to improve the safety and efficacy of drugs
- Prevention of death and disability due to injury, burns, shock, and trauma

NIGMS

Research Area	Grants*	
	No.	Dollars
Genetics	5	$1,209
Pharmacological Sciences	7	836
Physiology & Biomedical Engineering		
Anesthesiology	8	823
Trauma & Burns	18	3,172
TOTAL	38	$6,041

*NIGMS has no contract or intramural programs in prevention.

National Institute of Neurological and Communicative Disorders and Stroke (NINCDS)

- A world-wide epidemiologic survey and investigation of the causes and relationships of aging disorders
- Development of vaccines for chronic infections of the central nervous system such as cytomegalo viruses, herpes, and toxoplasmosis
- Identification of factors, such as smoking and alcoholism, associated with high incidence of laryngeal cancer
- Studies of the epidemiology and underlying mechanisms of speech and language impairment in children before admission to school
- Studies of the underlying mechanisms of Sudden Infant Death Syndrome (SIDS)
- Studies of infantile febrile seizures as possible predictors of epilepsy
- Research on slow transmittable viruses, which cause chronic noninflammatory central nervous system diseases
- Studies of lysosomal storage diseases to intercept the development through counseling and prenatal diagnosis
- Studies of otitis media in children in relation in hearing loss, language, and cognition disorders
- Studies on the role of platelets and the use of aspirin in preventing transient ischemic attacks (TIAs)
- Epidemiologic studies to determine risk factors and antecedents for neurological and communicative disorders
- Research on the anatomical and physiological effects of noise and noise induced hearing loss

NINCDS

Research Area	Grants		Contracts		Intramural		Total	
	No.	Dollars	No.	Dollars	No.	Dollars	No.	Dollars
Neurological Disorders Program	78	$ 8,144	5	$1,425	10	$ 309	93	$ 9,878
Communicative Disorders Program	31	4,038	1	41	1	10	33	4,089
Fundamental Neurosciences Program	6	363	1	50	--	--	7	413
Stroke & Trauma Program	24	2,303	5	932	--	--	29	3,235
Office of Biometry & Epidemiology	--	--	10	700	8	75	18	775
Intramural Research Program	--	--	1	79	67	6,631	68	6,710
TOTAL	139	$14,848	23	$3,227	86	$7,025	248	$25,100

Division of Research Resources (DRR)

DRR supports a wide range of prevention activities through programs designed to develop and maintain appropriate resources for biomedical research, which support:

- Epidemiologic studies and identification of risk factors for numerous health conditions
- Research to improve the nutritional status of mothers, infants, and pregnant teenagers; effects of nutrition on diabetes and hypertension
- Studies on the effects of exercise on lipoprotein levels and vascular disease
- Behavioral effects on health
- Pregnancy and infant care among adolescents, low-income persons, and those at risk of genetic diseases
- Toxic agent surveillance to determine the biological effects of toxic substances and methodologies to identify and detect them
- Community and professional preventive health approaches

DRR

DRR Program	Grants [2]	
	No.	Dollars
Animal Resources Program	8	$ 869
Biotechnology Resources Program	6	47
Biomedical Research Support Program	128	1,000
General Clinical Research Centers Program	40	3,658
Minority Biomedical Support Program	12	966
TOTAL	194	$6,539

[1]Prevention funding is categorized in the first chart according to DRR programs and in the second chart according to cross-cutting research categories.

[2]DRR has no research contract or intramural programs in prevention.

[3]Grants are broken into subprojects, for which precise FY 1980 number totals are unavailable.

[4]Estimates based on FY 1979 data.

Research Category [3]	Dollars [4]
Alcohol Related Research	$ 142
Counseling/Genetics	102
Dental Prevention/Fluoridation	55
Epidemiology/Etiology	329
Fitness/Exercise	82
Education, Public	49
Heart Disease Prevention	366
Infectious Agent Control	67
Behavior/Mental Health	99
Nutritional/Diet Modification	341
Occupational Safety & Health	29
Pregnancy & Infant Care	2,636
Family Planning	6
Stress Control	79
Smoking	14
Toxic Agent Research Control	1,754
Vaccine Research	196
Prevention of Other Conditions	97
Technique/Method Evaluation	25
Medical/Preventive Services	71
TOTAL	$6,539

Fogarty International Center (FIC)

- Ecological and epidemiological field studies of the Lassa Fever virus
- Research and training on disease prevention in the tropics through the Gorgas Memorial Laboratory
- Support for studies in preventive medicine research by scientists living outside the U.S. through International Research Fellowships at American universities
- Support for the Scholars-in-Residence Program
- Coordination of multiagency support for biomedical research

FIC

Research Area	Grants		Contracts		Total	
	No.	Dollars	No.	Dollars	No.	Dollars
Lassa Fever Studies	--	$ --	1	$ 40	1	$ 40
Gorgas Memorial Laboratory	--	--	1	1,300	1	1,300
International Research Fellowships	35	525	--	--	35	525
Scholars-in-Residence	1	50	--	--	1	50
Conference Support	--	--	14	260	14	260
Total	36	$575	16	$1,600	53	$2,175